DOCUMENT RESUME

ED 158 865 PS 009 568

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TITLE An Overview of Research Strategies and Findings (1971-1975) of the Kamehameha Early Education Program. Technical Report #66.
INSTITUTION Kamehameha Schools, Honolulu, Hawaii. Kamehameha Early Education Project.
SPONS AGENCY California Univ., Los Angeles. Mental Retardation Research Center.; Hawaii State Dept. of Education, Honolulu.
PUB DATE Oct 76
NOTE 40p.; For related documents, see PS 009 533-567 and PS 009 569-573

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Academic Aspiration; *Classroom Research; *Demonstration Programs; Early Childhood Education; *Educational Improvement; Hawaiians; Linguistic Competence; *Program Development; Reading Research; Research Criteria; *Research Design; *Research Methodology; Teacher Education
IDENTIFIERS Hawaii; *Kamehameha Early Education Program

ABSTRACT

This report reviews the major lines of investigation of the Kamehameha Early Education Program (KEEP) for the period 1971-75. A brief introductory section describes the selection of initial research strategies, identification of problems, issues in research design (such as internal versus external validity) and problems pertaining to the process of translating theoretical research into classroom practice. A major portion of the report focuses on a discussion of KEEP's four major lines of research: student industriousness, linguistics, reading, and staff training/consultation. Additional areas of KEEP research are briefly summarized and include culture and family research, evaluative and outcome research, and an account of cooperative research efforts with investigators from other institutions. (CM)

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Technical Reports

of

The Kamehameha Early Education Program

a research and development program established and funded by

The Kamehameha Schools/Bernice P. Bishop Estate

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Technical Report #66

October, 1976

The cooperation of the State of Hawaii Department of Education is gratefully acknowledged, as is the support and resources made available by the Sociobehavioral Research Group, MRRC, University of California, Los Angeles.

PS 009568

The opinions expressed herein do not necessarily reflect the position, policy or have the endorsement of The Kamehameha Schools/Bernice P. Bishop Estate, or of the editors.

Published by The Kamehameha Early Education Project, 1850 Makuakane Street, Honolulu, HI 96817

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

The Kamehameha Early Education Program

The Kamehameha Early Education Program (KEEP) is a research and development program of The Kamehameha Schools/Bernice P. Bishop Estate. The mission of KEEP is the development, demonstration, and dissemination of methods for improving the education of Hawaiian and Part-Hawaiian children. These activities are conducted at the Ka Na'i Pono Research and Demonstration School, and in public classrooms in cooperation with the State Department of Education. KEEP projects and activities involve many aspects of the educational process, including teacher training, curriculum development, and child motivation, language, and cognition. More detailed descriptions of KEEP's history and operations are presented in Technical Reports #1-4.

Preface

This report reviews the major lines of investigation of the Kamehameha Early Education Program (KEEP) for the period 1971 through Spring, 1975. We have written this report for that audience of scientists and professionals who are concerned with the educational problems of minority culture youth. In this report, we present five extensive reviews of research findings; these reviews represent matured lines of KEEP research. Work in progress or not fully conceptualized is described briefly in the introductory section.

Because of preparation and editorial leadtime, work carried out in the fifth year of KEEP (1975-1976) is not included in this report. Subtracting the start-up time of one and a half years--which includes construction delays--this report covers two and a half years of research activity.

During this two and a half year period, we have pursued four major lines of research. They are: reading, linguistics, student industriousness, and teacher training/consultation. Findings related to each of these areas are reviewed in detail in accompanying reports. Futher details on particular investigations are available in the approximately 65 KEEP Technical Reports and working papers (a current list of Technical Reports and working papers is presented in Appendix A).

In addition to this review of research, we have also prepared a summary of KEEP research for a broader audience. This summary is an unelaborated statement of major KEEP activities and findings; of necessity, it oversimplifies since it condenses to a few pages what is presented here in dozens of pages.

There are many people to whom we are grateful. We thank them all for their support and assistance--the ones at the Kamehameha Schools/Bernice P. Bishop Estate, the University of California, Los Angeles, the Department of Education, the University of Hawaii, and, most especially, the people at KEEP who made it work.

Ronald Gallimore
Roland G. Tharp

Technical Report #66

An Overview of

Research Strategies and Findings

1971-1975

of the Kamehameha Early Education Program

Ronald Gallimore Roland G. Tharp

KEEP was established to research and develop effective ways to teach Hawaiian-American children fundamental educational skills. The means was to be a research organization capable of simultaneously following several lines of investigation. KEEP is a multifaceted program of research and development rather than a project; it was designed to carry on many investigations, not to test the relative value of a preselected approach.

The selection of a programmatic research and development strategy was jointly shaped by national and Island experiences. In the early 1970s, the nation discovered that large sums of money, enthusiasm, and imaginative programming alone would not solve the educational problems of minority culture youth. In Hawaii, the State Department of Education experimented with innovative programs, keeping in step with national trends, and, at times, showing the way. Headstart, Follow Through, compensatory programs, and TESOL, among other approaches, were tried and were evaluated as often helpful, sometimes necessary, but not sufficient.

We concluded that, in Hawaii, there was a need for sustained, fine-grained analysis of the educational process (Tharp & Gallimore, Technical Report #3). Even if a particular program worked or produced gains, the reasons were not

always clear, thus making any transfer to other settings difficult. With the establishment of KEEP, we hoped to separate fact from wish, to balance program enthusiasm with understanding, and to define the necessary and sufficient conditions for Hawaiian-American student achievement. To do this, it was clear that a single project or investigation would not succeed; a long-term sustained effort would be necessary.

In addition to developing ways to educate, a founding goal of KEEP was the discovery of effective means to communicate the findings of research to public school teachers. It was this goal that led to the KEEP relationship with Hawaii public schools and the KEEP consultation/dissemination research program, and the definition of the KEEP school as a demonstration, as well as a research, center.

We have attempted at KEEP to create an externally valid setting in which to pursue several lines of internally valid research. The external population for which we seek valid findings are the Island children who experience difficulty and who are the special concern of The Kamehameha Schools/Bishop Estate. The external setting is the public school classroom. With one important exception, we have attempted to operate a realistic program, respecting the constraints that face public schools now and in the forseeable future.

The important exception was the research mechanism that was built around and in what was otherwise a typical public school. The research mechanism was organized to analyze and, as necessary, change the basic public school model toward the goal of effective education of the minority culture child. We thought it at least possible that with some tinkering the basic public school model might work for our target population. Such an outcome would have enormous practical advantages. The goal was to develop and refine approaches

that not only will work in public classrooms, but will have some chance of being adopted; that solution which required the least change would be the most desirable. Therefore, the KEEP model will gradually be defined through a series of least-changes necessary to product effective learning.

Selection of Initial Research Strategies and Problems

In 1970, when the KEEP research and development program was conceived, there was no lack of opinion on what was required to make schools effective for minority culture youth. The problem was a lack of facts. For example, although the role of Hawaiian Islands Creole English (pidgin) has been argued for decades, there were virtually no studies of its specific impact on educational achievement or on the learning process of Island children. Despite the absence of facts, there was some interest in radical and expensive dialect-related innovations--Creole readers, Standard English drill, and so forth.

Those we consulted agreed that the major problems for public education were student industriousness, profound reading retardation, language difficulties, and teachers who were unprepared for culturally heterogeneous classrooms and unruly children. Earlier research in a single community generally confirmed these to be the problematic areas (Gallimore, Boggs, & Jordan, 1974; Gallimore & Howard, 1968; and MacDonald & Gallimore, 1971). However, there was no agreement on effective solutions. We were advised to review the literature, consult experts, weigh the results, and select for each problem area an approach or program on which to place our bets. In short, we should select the currently most plausible or popular scheme and give it a one-shot, thorough (and expensive) trial.

We rejected this approach. We did not believe then, nor do we now believe that anyone's "best guess" at a program is worth the gamble involved. Millions of dollars of the Hawaiian childrens' heritage is at stake, but also at risk

is the first opportunity for the Kamehameha Schools/Bishop Estate to make a substantial research contribution to the educational needs of the majority of Hawaiian children. In our view, KEEP should emerge as a permanent problem-solving resource for Hawaiian education, able to adapt its focus as social conditions change and bring change to educational issues. The first tactic of this unit was to resist making recommendations, resist enthusiasms (even our own), until we had gained a thorough, inside-out, data-based knowledge of Hawaiian children and their classrooms.

Thus, we had two related tasks. The first was to build an organization capable of sustained inquiry into topics which would vary as widely as do the issues affecting Hawaiian education. The organization had to be built from scratch: a building constructed, children enrolled, their parents' cooperation gained, a staff recruited and trained. This organization had to learn from and to teach its host institution, The Kamehameha Schools/Bishop Estate, how to nurture and to benefit from a research operation. Complex and vital relationships with the State Department of Education had to be developed and maintained.

The second task was to gather the data.

The next stage will be to develop specific programs, whose value can be demonstrated, which can be exported to the Department of Education, and which will be so founded on evidence that the gamble of their failure will be minimized. In fact, that program development occupied most of our energies until 1976, the results of which have not been digested in time for this report, which concentrates on the broad inquiries and findings upon which the eventual KEEP recommendations will be based.

A broad-gauged theoretical and empirical approach has provided several advantages. It permits different but related lines of investigation: reading,

linguistics, student industriousness, and teacher training/consultation, as well as explorations in cognitive, cultural, and personality research. Within these lines of investigation, diversity of theory and method are also possible, so that different approaches and perspectives can be focused on a single problem. For example, the linguistic research (Gallimore & Tharp, Technical Report #59) included two independent researches: 1) the effort to devise measures of Standard English and Hawaiian Islands Creole, and 2) experimental and developmental studies of Standard English acquisition. These investigations proceeded independently and yet arrived at a final, common conclusion. Thus, the credibility of the results is greater.

By not committing to a single theory or program, we believe KEEP has been more open to new hypotheses and ideas from both external and internal sources. Even with the approach we took, in a rapidly growing organization, it has been difficult to maintain the openness and flexibility necessary to pursue new ideas and abandon favoirte hypotheses. We imagine it must be nearly impossible when the task is to prove that the original choices are correct.

There have been disadvantages to the broad-gauged approach. The most immediate was the difficulty of explaining to friends and critics what we were about. We described this problem earlier (see Technical Report #4); we have never completely solved this public relations difficulty.

Part of the reason is that we have tried to do something essentially different from many people's conception of an education research project. Because we operate a school, many visitors expect us to have a particular enthusiasm, an "It" that can be evaluated by student achievement measures. In the period covered by this report we had no "It." A school operation can be evaluated by the performance of the students, but the KEEP research must be jduged in terms of the quality and quantity of results of the some

75 studies that have been conducted. We never expected that the value of the research could be tested in the short-run by outcome achievement measures. After all, the initial strategy was to operate an externally valid representation of a public school. During KEEP's first years, little could be learned about our research by examining student achievement measures since the school represented the best, but limited, range of practices currently in use in the public schools, for example, identical teacher-pupil ratio, curriculum, and so forth (see Technical Report #4).

Visitors to KEEP still expect to see the "It," the "set" of innovations which we advocate. We still struggle to explain our broad-gauged approach, and the commitment to research. In future years, what they see will change as research informs program. After our initial years of using the public school model, we have begun moving toward a KEEP approach to educate those Island children who are the special concern of The Kamehameha Schools/Bishop Estate. In some respects, it confirms public school practices; in other ways, we have discovered refinements and alternatives that appear to be more effective, at least with the populations with whom we have worked.

We have begun to narrow the gauge. As KEEP research continues, the theories and programs to which the work has led will be changed and refined, as were their predecessors.

External versus Internal Validity, and the Role of Qualitative Knowing

Perfect research design in behavioral science is rare, perhaps impossible. Normally an investigator seeks maximum protection against internal validity threats, often at considerable cost to external validty. For example, potentially important population variables--such as age, sex, social class, to name a few--might be controlled by elimination in order to achieve an internally valid study of complicated variables. Determining the generalizability

(or external validity) of the findings to populations other than those used would, of necessity, require further work. Such a strategy has many critics who argue that the traditional emphasis on internal validity has been costly. The harshest critics regard as trivial the tightly controlled internally valid experiments published in journals of psychologic science.

In practice, researchers place differential importance on internal and external validity, depending on their training, personal predilictions, research problem, and the like. For some time, the trend in psychology was toward increasing internal validity, with little concern for threats to external validity (Cronbach, 1975). Recently, dissatisfaction with the result of this trend has led to more interest in field studies, and other alternatives to quantitative-experimental social science.

Part of the force behind the renewed interest in externally valid psychological research is the recognition that main effects may be an exception in human behavior. Unlike the physical sciences, the norm in psychological science may be higher order interactions that defy reduction to one set of independent variables (Campbell, in press). This argument will no doubt heat up in coming years; whatever one's prejudices, this renewal of the quantitative-qualitative argument yields a healthy, stimulating tension in behavioral science.

This tension has been an important dynamic at KEEP. Many of our conclusions are significantly influenced by the fact that we, as practicing researchers with a commitment to internally valid designs, have had simultaneous operating responsibility for a "real" school. The school has been an insistent reminder of external validity issues.

For example, one study produced a statistically and theoretically important correlation between attentiveness to a peer tutor and amount of sibling care-taking in the home (see Technical Report #20). The internal validity

was good, the external validity doubtful. In the first place, the amount of actual difference in child attentiveness was slightly less than 10 percent. To achieve this 10 percent increase with children from high sibcare homes, virtually the entire curriculum and most of the school operation would have had to be changed. We know from operating a school for five years that major changes of any kind have effects that even the wisest observer cannot anticipate. The interactions that are produced when an innovation is installed are often far more potent than the simple main effect which the study revealed. At best, the study could support this general statement: In some settings, peer tutoring may be an effective teaching tactic, but each situation will require careful pre-intervention assessment and planning.

We could have pursued the peer-tutoring finding with a more intensive research effort. Perhaps the initial finding would lead to a wealth of data that would justify or illustrate how peer tutoring could be more full integrated into daily instruction. But our other on-going investigations and experience in operating the school clearly suggested that alternative sources of attentiveness were far more significant: teacher skills, child's linguistic fluency, and so forth. In these respects, the peer-tutoring study had little external validity for school classroom operation, though clearly the obtained correlation might be generalizable to (have external validity for) other communities in which sibling caretaking occurs.

The interactions which may threaten internal or external validity often defy the most clever efforts at research control. For example, one of our studies attempted to compare several teacher-training techniques; teachers at KEEP were the participants. We imagined that being the administrators of the school and the teachers' immediate authorities would increase the degree of control we could exercise over extraneous variables. Previous efforts in

public schools had always been troubled by factors related to our minimal influence over either teachers or administrators. Every researcher knows how even well-intentioned persons may unwittingly compromise an experiment. At KEEP, we had authority, and thus could directly instruct (order) the teachers to follow the prescribed training routine. Of course, our unusual degree of control interacted with staff response to training (Sloat, Tharp, & Gallimore, Technical Report #41). Enlarging the study to include an appropriate control group would have introduced more threats to validity, for example, the problem of trainee compliance with instructions in schools where close monitoring is impossible or resisted, and so forth. This conclusion is shared by Cronbach (1975): The sample size "required for establishing complex interactions, at least in instructional research, becomes prohibitive" (p. 124).

In a provocative critique of fixed-condition experiments which seek to identify main effects, Cronbach argues that the

> experimental strategy dominant in psychology since 1950 has only limited ability to detect interactions. Typically, the investigator delimits the range of situations considered in his research program by fixing many aspects of the conditions under which the subject is observed. The interactions of any fixed aspect are thereby concealed, being pulled into the main effect or into the interactions of other variables. The concealed interaction may even wipe out a real main effect of the variable that chiefly concerns the investigator....When the system of interest cannot be constrained to fit a limited model, the function of research in highly standardized conditions is primarily to identify pertinent variables and to suggest possible mechanisms to study in more natural situations. (1975: 123-124)

Cronbach's analysis echos our experience at KEEP. Fixed-condition experiments (our own and from the literature) have helped to identify important variables to be pursued in the externally valid school we operated. As he suggests, however, an overreliance on the fixed-condition paradigm is an unnecessary and regrettable limitation to impose on one's research.

Cronbach's suggestions for enlarging the range of accepted research

strategies also provide an accurate summary of what we learned at KEEP about doing problem-oriented research:

> From Occam to Lloyd Morgan, the canon has referred to parsimony in theorizing, not observing. The theorist performs a dramatist's function; if a plot with a few characters will tell the story, it is more satisfying than one with a crowded stage. But the observer should be journalist, not a dramatist. To suppress a variation that night not recur is bad observing. (1975: 124)
>
> The time has come to exorcise the null hypothesis. We cannot afford to pour costly data down the drain whenever effects present in the sample 'fail to reach significance.' Originally, the psychologist saw his role as the scientific observation of human behavior. When hypothesis testing became paramount, observation was neglected, and even actively discouraged by editorial policies of journals. (ibid)
>
> The canon of parsimony, misinterpreted, has led us into the habit of accepting Type II errors at every turn, for the sake of holding Type I errors in check. There <u>are</u> more things in heaven and earth than are dreamt of in our hypotheses, and our observations should be open to them (Cronbach, 1954). (ibid)
>
> Instead of making generalization the ruling consideration in our research, I suggest that we reverse our priorities. An observer collecting data in one particular situation is in a position to appraise a practice or proposition in that setting, observing effects in context. In trying to describe and account for what happened, he will give attention to whatever variables were controlled, but he will give equally careful attention to uncontrolled conditions, to personal characteristics, and to events that occurred during treatment and measurement. As he goes from situation to situation, his first task is to describe and interpret the effect anew in each locale, perhaps taking into account factors unique to that locale or series of events (cf Geertz, 1973, Chap. 1). (ibid: 124-125.)

On the other hand, a purely qualitative approach is not sufficient. This is best illustrated by the state of affairs when we began KEEP: Competent researchers and professionals were in sharp disagreement over what to do about Hawaiian-American underachievement. Clearly their qualitative analysis had not led to a consensus; the absence of quantitative studies appeared to be the major need in an otherwise busy and productive field. It is an appreciation of both means of knowing that has proved most valuable for us.

<u>From Theory to Practice: A Missing Link</u>

A colleague visited us and asked why we were not pursuing the idea of

using group/team work in order to capitalize on the high affiliation motivation of Hawaiian-Americans. This idea had been prominently featured in our earlier research (Gallimore, 1972; Gallimore, 1974; Gallimore, Boggs, & Jordan, 1974), and he expected to see in KEEP classrooms some clear reflection of the teamwork/affiliation hypothesis. In fact, there was; then again, there was not. The problem was to explain to our colleague the long and winding road between theoretical abstraction and effective practice.

His reaction illustrated an important point. When asked, he could not specify the observable outcomes he had expected the teamwork/affiliation hypothesis would yield. He accepted our argument that the use of learning centers (five to six children working at tables) was one form, but he clearly was not impressed since such a practice is common to many schools in communities where there are no Hawaiian-American affiliators. He was looking for something a bit more unique, something to get enthusiastic about.

In our experience, hypotheses such as the one our visitor thought had merit, are merely points to begin classroom research and development. By the time an effective and workable derivative has been devised, it is often no longer recognizable as the offspring of the original idea. The reason is the surplus expectations that many appealing hypotheses imply, but are not explicitly stated or even understood by the innovator or the hypothesis maker.

Sarason (1971) presents an excellent example of this point in his description of the history of the New Math reform in a single school district. The advocates of the New Math intended that fundamental changes would be made in the nature of student-teacher relationships, but these goals were never explicitly stated nor actively pursued. Instead, effort and attention were directed to creating New Math curriculum materials and persuading school districts to adopt them. He refers to New Math and other innovations, but he

could just as well have included the team work/affiliation hypothesis:

> The goals of change. the outcomes sought, surely are not to see if it is possible to substitute one set of books for another, change the racial composition of a class or a school, or have children read or listen to black or Mexican history--those possibilities are relatively easy to realize, and I have seen them realized in precisely the same way as in the case of new math, with precisely the same outcome: the more things change the more they remain the same.
>
> Realizing these types of possibilities simply begs the question or their intended consequences, and in these as well as in other instances the intended consequences--the basic goals and outcomes--always intended a change in the relationships among those who are in or related to the school setting. But these intended consequences are rarely stated clearly, if at all, and as a result, a means to a goal becomes the goal itself, or it becomes the misleading criterion for judging change. Thus, we have the new math, but we do not have those changes in how teachers and children relate to each other that are necessary if both are to enjoy, persist in, and productively utilize intellectual and interpersonal experiences--and if these are not among the intended consequences, then we must conclude that the curriculum reformers have been quite successful in achieving their goal of substituting one set of books for another. (Sarason, 1971: 48)

Many of our visitors (critics) have been disappointed at the lack of apparent connection between Hawaiian cultural styles and KEEP classroom practices. We early found that an insistence and focus on such connections led to precisely the same limiting outcomes described by Sarason (Gallimore & Tharp, Technical Report #2). Cultural practices may provide a place to begin, but the real work starts with the transformation of an appealing idea into a program component that achieves both implicit and explicit expectations.

In the example of the team work/affiliation hypothesis, the goal for incorporating such practices would have the implicit end of increasing learning, not merely substituting one form of clasroom organization for another. Maintaining a focus on the real goal leads to steady revision of means, and those means, if they are subordinated to the goal, emerge looking very different from when they began.

Of course, the same problem occurs in efforts to translate into classroom practice an appealing change whatever the source--Hawaiian culture, research

journals, university critics, informed laymen, personal imagination. We have been ourselves surprised that scientific psychology sources are no less difficult to exploit.

Sarason argues that the tendency to leave unstated all the intended consequences of an innovation is a function of a larger problem that troubles all institutions, not just schools.

> The theory or problem of change is not in the focus of their thinking (school critics and reformers).... It is not that these people are anti-theoretical or untheoretical, because mant of them are quite sophisticated as to the theoretical bases for what should or ought to be. What their theories fail to do is to face the problem of how one gets to one's goals.....this is far from being a 'practical' problem (in the sense of how one 'engineers' change) but rather we are dealing with a theoretical problem involving not means and ends, but a continuous process. That reality stubbornly refuses to conform to our theories and categories of thought is what has caused so much grief. (1971: 21)

> Why is there frequently underestimation of how long it takes to initiate the change process--an underestimation that can arouse such feelings of anger or discouragement that it may result in aborting the process or in enveloping it in an atmosphere inimical to the intended outcome; why is the estimation of time necessary to achieve intended outcomes usually a gross underestimation? (1971: 60)

Social Science Theory and Method

Our five years of research and operational responsibility are consistent with Sarason's analysis. Achieving goals is a great deal more difficult than creating them. There has been one constant in this process: the unfailing and immediate contribution to the means-ends process of the scientific discipline--methods of social science in general, and psychology in particular. The notion that it is the methods and not the theories of social science that stand the test of time has been recently suggested by Campbell (1973) and Cronbach (1975). Certainly the KEEP experience confirms the relatively greater value of methods. The problem with the theories we have already implied in our discussion of higher order interactions: There is an enormous and dynamic universe of situational and behavioral variables in a given setting that tend

to invalidate the static empirical generalizations of social science. Although he is pessimistic that science can develop "enduring systematic theories about man in society," Cronbach suggests that systematic inquiry can make two contributions. "One reasonable aspiration is to assess local events accurately, to improve short-run control (Glass, 1972). The other reasonable aspiration is to develop explanatory concepts, concepts that will help people use their heads." (Cronbach, 1975: 126)

We are thereby returned to our first, original goal: to build KEEP as a permanent problem-solving resource, one which can race after the changing, confusing world, achieving local (Hawaiian) understanding, securing control for perhaps a decade at a time, and helping people to use their heads.

Major Lines of Investigation

Four major lines of research were each separately organized and initiated at different points in time: student industriousness, linguistics, reading, and training/consultation. Interweaving occurred in various ways: For example, after two years, the linguistic research had produced two measures of dialect fluency (standard and nonstandard) which became important elements in our study of reading problems. Earlier, these two lines of work were essentially independent. Of course, at the beginning, we anticipated our various efforts would eventually intertwine, but no special effort was made to impose an overreaching or integrated theoretical net.

Appended to this report are a complete list of Technical Reports and Working Papers, and a list of 34 major KEEP findings, briefly stated.

Student Industriousness

The conception of KEEP followed on the heels of the national development of education behavior analysis (Tharp & Wetzel, 1969). In Hawaii, the work

in Leeward Oahu schools had begun to explore and develop applications of behavior analysis to the particular cultural patterns of Hawaiian-Americans (Gallimore & Howard, 1968; MacDonald & Gallimore, 1971). The emphasis in both of these developments was upon increasing the amount of time students spent on classroom assignments--what a senior Hawaii educator described as "industriousness," a term we have borrowed.

The complaint was widely voiced in 1970 that many Island children did poorly in school because they were not sufficiently industrious (Tharp & Gallimore, Technical Report #1). Earlier efforts to increase student work time showed promise; for example, MacDonald and Gallimore (1971) provided special training for teachers which appeared to increase student industriousness, and in turn, academic achievement. For the most part these efforts were remedial, involving older children who were already many grade levels behind in achievement.

KEEP began promoting industriousness from the beginning of kindergarten. The question was: If students from the beginning of their school experience are systematically trained and encouraged to be industrious, what academic benefits will be gained?

The initial strategy involved training KEEP staff in use of industriousness enhancement techniques of previously demonstrated value, for example, use of positive reinforcement. Careful monitoring of both teacher and classroom behavior was carried on, as well as daily observation of child industriousness (see Technical Reports #6, #19, and #24). By continuous monitoring we hoped to achieve what Cook and Campbell (in press) have described as construct validity. That is, construct validity depends upon a proper translation of theory into either independent or dependent variables. In the case of student industriousness, it was absolutely essential to assess the effects of staff

training; rates of teacher use of behavior management techniques had to go above baseline and remain there. For a more complete review of industriousness research see Tharp and Gallimore (Technical Report #60).

Linguistics

When KEEP began, the debate raged hotly over the role of nonstandard dialects in educational underachievement. In Hawaii, a similar controversy embroiled the Island dialect commonly called pidgin. Our strategy in this case was strictly empirical; it was clear that much of the debate was theoretical or moral in substance, with neither side of the argument in possession of many facts. We began two lines of study. First, work was focused on development of reliable and valid means of assessing standard and nonstandard dialect performance levels. These efforts resulted in two instruments, which are described in Technical Reports #15 and #28. Concurrently, a more focused series of studies explored the acquisition and use by Island children of particular grammatical features. The purpose of the latter was to provide a fine-grained analysis of factors affecting dialect use and competence. A complete review of the language research is presented in Gallimore and Tharp (Technical Report #59).

Reading

A phased, multimethod research strategy was adopted. We assumed that the magnitude and complexity of the reading problem was best attacked from several directions. We have experimented both in the sense of carefully observed changes in the school's reading program, and in the use of short-term expermental studies.

The school's reading program and the research were organized in successive yearly phases. The first year we sought to establish a baseline of achievement levels obtained with a standard basal reader program under the special conditions at KEEP. With the emphasis on enhancing industriousness in operation,

we sought to determine if increases in student effort coupled with a well run, but standard, reading program would improve achievement levels. We concluded that industriousness was necessary but not sufficient (see Tehcnical Report #26). The second year a series of experiments were conducted which tested the hypotheses that were derived from the first year of work. The results of this work are summarized by Au in Technical Report #57.

Training/Consultation

Staff-training studies were interwoven with the industriousness research, since much of the latter depended upon teacher acquisition of new skills. Two approaches have been employed: (1) closely supervised case studies of teachers in training, with quantitative data taken on teacher and student classroom behavior; and (2) component-process studies involving both KEEP staff and public school teachers. The latter have been simultaneously evaluations of various forms of export consultation to cooperating public schools.

Explorations of approaches to exportation have included variations in site of consultation (inaccessable rural to nearby urban), styles of consultation (unfocused troubleshooting to highly structured), and problem area (from student industriousness to teaching reading).

We have followed Tharp's (1975) distinction between training and consultation in selection of dependent variables. Briefly, in instances where the behavior to be trained has been independently evaluated, data are taken on the targets of training. In consultation, data are taken on both those in training or under supervision, and on those individuals the trainee is to be taught to help. Thus, in a training study, we might assess teacher praise rate; in a consultation, we might add a direct observation measure of student work rates. Tanaka-Matsumi has summarized this research (Technical Report #58).

Additional Areas of KEEP Research

In addition to these main areas of research, there are a variety of efforts that are in progress or have been completed at KEEP. Those completed are described in more detail in Technical Reports and Working Papers, references to which will be provided with the brief summaries that follow.

Culture and Family Research

A major new line of research on family and cultural factors was begun at KEEP in 1975. One report is now available (Jordan, Technical Report #61). Jordan analyzed the content of KEEP mother-child interactions. Mothers and their children were given tasks which had to be completed by cooperative work. Amounts of verbal, predominantly verbal, predominantly nonverbal, and nonverbal directions by the mother were measured. The results showed a significant positive correlation between amount of verbal and predominantly verbal directions and children's IQ scores as entering kindergarteners. A comparison group of mainland mothers used more verbal instructions than did KEEP mothers.

Classroom ethnographic studies are in progress. The topics covered include child role-taking and peer teaching. This effort is the first long-term KEEP effort to do fine-grained ethnographic observation studies of classroom activities. It is anticipated that this line of work will provide a continuing source of new hypotheses, as well as a broader view of child behavior than our systematic observation studies (for example, Technical Reports #6 and #19).

Also in progress is a two-pronged effort to increase our understanding of the family life of KEEP children. This effort--the KEEP Family Research Program (FRP)--extends analysis of Hawaiian child behavior to a second major source of influence. The overall purpose of the FRP is to determine the extent to which KEEP school performance is correlated with home factors. Research to date has

clearly shown substantial variability among the children who enter KEEP at age five. Some of the differences can be attributed to the capacity of the child. Others seem more likely a function of experience. For example, the children vary widely in language fluency, which has been identified as a major factor in reading acquisition; the children's home environments differ as well.

Two methods of study have been adopted. First, an extensive interview schedule was developed. This procedure covers the major features of family life, including questions regarding child behavior and management, family structure, organization, and composition, income and residential change data, and so forth.

A second independent source of information is the field observation project (FOP). The FOP is gathering data on a sample of KEEP children during their home and outdoor activities after the KEEP bus brings them home in the afternoon. KEEP staff visit the homes and observe the child, his caretakers (if any), and the social settings the child is in. The topics of current observational focus include a number potentially related to classroom performance: (1) child's tasks and activities, (2) social group settings and characteristics, (3) language use, (4) home teaching, (5) disciplining or compliance, (6) child caretaking, and (7) unobtrusiveness of observer.

At this point, the FOP is a hypothesis-generating study. While there are several issues to be examined that were raised by earlier work, the major thrust at this time is exploratory. Our aim is to narrow down the number of family and home variables and develop testable hypotheses. Subsequent work will be more directed, and based on a more carefully drawn picture of natural settings, language use, activities, and so forth.

Outcome Research

To verify the assumption that research activities do not interfere with

the normal instruction given to KEEP students, each class's educational and intellectual achievement is assessed, and comparisons made with other classes in Hawaii. Technical Report #36 discusses the results of standardized IQ and achievement tests given to KEEP's Class I, II, and III, and to two comparison schools in Kalihi, to a school in a rural area of a neighbor island, and to a school in a middle-class suburb of Honolulu. The results indicate that KEEP is meeting its educational responsibilities for its students in terms of academic readiness and genral intellectual achievement, both in comparison to national norms and to the relatively comparable schools in Kalihi. In terms of reading skills, KEEP students are reading at the level of schools they would have normally attended, although the reading performance of all schools tested is below national norms.

Technical Reports #5 and #40 present more detailed pre- and posttest results for the kindergarten years of KEEP Classes I and II, respectively. Results are presented for the Wechsler Preschool and Primary Scale of Intelligence (WPPSI), the Metropolitan Readiness Test (MRT), and the Standard English Repetition Test (SERT). Significant correlates of the three measures and selected SES variables are presented. These data suggest there is considerable variability within KEEP classes, both in terms of entering skill and achievement levels, changes over time, and family background.

Efforts to describe and interpret the extensive within-group variability are in progress. One approach is to categorize students on the basis of kindergarten entry status, and examine their progress across time. Another approach is the use of multivariate analysis, (Technical Report #54).

Cooperative Research Efforts

From time to time, KEEP has cooperated with investigators from other

institutions. The major and continuint cooperative arrangement is with the Sociobehavioral Research Group, MRRC, at the University of California, Los Angeles. Since 1971, two members of the Sociobehavioral Group (Professors Price-Williams and Edgerton) have operated a research project in the Hookena School area. Hookena School is the site of a major KEEP consultation research activity, and provides a point of contact between KEEP and the UCLA project.

There are two interlocking components of the UCLA-Hookena Project, one ethnographic and anthropological, and the other cognitive and linguistic. Through informal channels, workers in the two projects have provided information exchange. More formal reports of the UCLA-Hookena Project are in preparation and will be available at a later date.

Cooperation with researchers from the Department of Psychology, at the University of Hawaii has also produced results valuable for KEEP. Dr. William Higa assessed the contribution of self-instruction in a cognitive training package; the goal of the package was to train children to use speech as a mediator of overt behavior. Higa compared self-instructional training to a direct training procedure. There were no differences between posttraining test performance of impulsive children in the self-instruction and direct training groups; in addition there was no correlation between appropriate use of self-instructions and task performance (see Technical Report #63).

Another University of Hawaii researcher, Dr. David Lam, assessed the effectiveness of different child-training methods. Three distinct procedures were compared: (1) simple instructions, (2) simple instructions plus peer modeling, and (3) simple instructions plus modeling plus child rehearsal. A fourth group served as placebo controls. A second variable was expectancy of reinforcement. Children were taught basic readiness skills, such as following directions, answering questions, and so forth. Each child was assigned to one of the training

conditions; a fourth group of children was assigned to a control group. There were a number of significant findings; while there were no large differences across the training conditions, children with an expectancy of reward who received instructions, peer modeling, and rehearsal training learned the most (Lam, 1975).

As a UCLA predoctoral student, Dr. Toni Falbo (now at Wake Forest) studied the preferences KEEP kindergarteners have for explaining success and failure outcomes. The data indicated awareness of the causal nature of achievement in kindergarten-aged children and considerable agreement between teacher and student responses (1973).

A second study by Dr. Falbo involved 48 KEEP kindergarteners. These data indicated that the children's explanations of achievement outcomes were related to IQ scores, income, and mother's education, but not birth order. The study showed that kindergarten-aged children have formed the connection between achievement causes and achievement outcomes, and that the attributional patterns associated with high versus low achievement can already be found among kindergarteners (1975).

In a related but independent investigation, Dr. Mark Stephens of Purdue University compared KEEP and Mainland U.S. children on measures of expectancies of internal versus external control of reinforcement. Preliminary analyses suggest the KEEP data failed to replicate widely reported findings from U.S. Mainland populations. Reconciling Stephens' data with Falbo's results must await final analyses of the Stephens data.

Future Directions

It is premature to attempt to a summary of our work in 1975-76; the concluding data are not in. However, our own reading of the data summarized in this report has led us into the following activities, which we anticipate will be the foci

for the foreseeable future.

1. Future inquiry into language and cognition, and most especially, their interrelationships.

2. The development of instructional programs for fostering KEEP children's ability to think linguistically.

3. The development of a revised, detailed reading curriculum.

4. Replication of reading program results with additional KEEP classes, and in public schools.

5. Further research into the naturally-occurring teaching and learning interactions of KEEP children.

6. Further research in methods for motivating DOE teachers to adopt KEEP findings.

7. Follow-up studies of KEEP children returning to public schools in fourth grade.

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Appendix A

KEEP Technical Reports

General

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4. Operational Features of the Kamehameha Early Education Project -- Gallimore, Tharp, & Speidel.

13 Selection of Children for the KEEP Demonstration School: Criteria, Procedures, and Results (1972-73 and 1973-74) -- Mays, Boggs, Tharp, & Gallimore.

Cultural Considerations

1. The Mutual Problems of Hawaiian-American Students and the Public Schools -- Tharp & Gallimore.

2. Solving Problems in Hawaiian-American Classrooms: Excellent Teaching and Cultural Factors -- Gallimore & Tharp.

12. "Good Work Awards": Effects on Children's Families -- Chun & Mays.

20. The Relationship of Sibling Caretaking and Attentiveness to a Peer Tutor -- Gallimore, Tharp, & Speidel.

25. Hawaiian Cultural Research: Some Applications and Some Cautions -- Mays.

61. Teaching Modes and School Adaptation -- Jordan.

Reading

5. Pretest and Posttest Results of the First KEEP Program Year -- Gallimore, Tharp, & Speidel.

23. KEEP Reading Research 1974: Overall Strategy and Preliminary Results -- Tharp & Gallimore.

26. KEEP Reading Research and Instruction: Results of the 1973-74 Program -- Au & Speidel.

34. Preliminary Report on Teaching Academic Readiness -- Au.

36. Standardized Test Results: KEEP & Comparisons, 1972-1975 -- Antill

37. Production Deficiency of Labeling Skills in a Prereading Letter Discrimination Task -- Speidel, Hao, & Gallimore.

40. Pretest and Posttest Results of the Second KEEP Class -- Fox.

42. Basal Reader Study: 1974-1975 -- Hao.

47. The Effect of Group Versus Individual Instruction on the Acquisition of Consonant Sounds -- Speidel.

48. Directionality in the Acquisition of Beginning Letter Sounds -- Speidel.

49. The Effect of Contingent Reinforcement on the Acquisition of Sight Vocabulary -- Brandt, Au, & Speidel.

50. An Analysis of Oral Reading Errors and its Implication for Reading Instruction -- Au.

53. Hawaiian Creole Speakers' Listening Comprehension Abilities in Standard Enlgish and Hawaii Creole -- Au & Speidel.

54. The Prediction and Explanation of Academic Achievement -- Gallimore & Tharp.

57. KEEP Reading Research: 1972-1975 -- Au.

64. KEEP Phoneme Discrimination Test -- Kobayashi.

65. The Relationship of Preschool Experience to Kindergarten and First Grade Achievement -- Fox, Gallimore, & Antill.

Industriousness

6. The Uses and Limits of Increasing Student Motivation -- Lam, Kidoguchi, Gallimore, Tharp, & Speidel.

9. Training of Classroom Relevant Behaviors with the "Staats Box" -- Sueoka, Speidel, & Gallimore.

11. The Development of a Token Reinforcement System for a Specific Lesson -- Au.

17. A Study of Time Spent Working at Learning Centers -- Omori, Speidel, Tharp, Chun, Au, & Granger.

18. Learning Center and Study Carrels: A Comparative Study -- Chun, Speidel, & Tharp.

24. KEEP Motivational Research: Strategy and Results -- Gallimore & Tharp.

55. A Comparison of the Industriousness Levels of KEEP and Public School Students -- Antill & Tharp.

56. A Comparison of KEEP and Public School Teachers' Rates of Positive and Negative Feedback -- Antill & Tharp.

60. The Uses and Limits of Social Reinforcement and Industriousness for Learning to Read -- Tharp & Gallimore.

Language

14. KEEP Language Research Strategies -- Tharp & Gallimore.

15. The Standard English Repetition Test (SERT): A Measure of Standard English Performance for Hawaii Creole English-speaking Children -- Day, Boggs, Tharp, Speidel, & Gallimore.

16. Sources of Linguistic Influence: Peers at Learning Centers -- Mays.

28. The Hawaii Creole English Repetition Test (HCERT): A Hawaii Creole English Performance Measure -- Day.

29. The Teaching of English to Hawaii Creole-Speaking Children -- Day.

30. The Acquisition of Plurality and Tense by Pidgin-Speaking Children -- Day.

59. Studies of Standard English and Hawaiian Islands Creole English: KEEP Linguistic Research, 1971-1976 -- Gallimore & Tharp.

Cognition

31. The Effects of Elaboration and Rehearsal on Long Term Retention of Shape Names -- Gallimore, Lam, Speidel, & Tharp.

32. Cognition Research: Progress and Plans -- Gallimore & Tharp.

Training and Consultation

7. Explorations in Teacher Training -- Speidel, Tharp, & Gallimore.

8. Training in Self-Examination from the Teacher's Point of View -- Sueoka, Speidel, & Chun.

22. Consultation and Dissemination: Research Strategy, 1974 -- Tharp & Gallimore.

27. Model for Continuing Resource Consultation: Hookena School, 1973-1974 -- Chun, Antill, & Tharp.

33. Training Teachers in the Use of Positive Feedback -- Speidel & Tharp.

41. The Incremental Effectiveness of Classroom-based Teacher-Training Techniques -- Sloat, Tharp, & Gallimore.

51. Consultation on a Basic Reading Skill: Hookena, 1975 -- Hao & Sloat.

52. The Incremental Effectiveness of Guided Practice and Feedback in a Course on Behavior Modification for Teachers -- Johnson & Sloat.

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35. Teachers-in-Training: Sample Research Projects -- Au.

38. The Attributional Explanation of Academic Performance by Kindergarteners and Their Teachers -- Falbo.

39. Achievement Attribution of Kindergarteners -- Falbo.

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63. Self-instructional Versus Direct Training in Modifying Children's Impulsive Behavior -- Higa.

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44. Description of the KEEP Math Curriculum: 1975-76 -- Chun.

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The Effect of Token Reinforcement on the Learning of Phoneme-Grapheme Correspondences -- Au & Weitz.

Serial vs Random Order in the Learning of Phoneme-Grapheme Correspondences -- Au.

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Kalihi Teacher Survey -- Wooddell.

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A Preliminary Investigation of Ways to Elicit More Oral Responses from Nonverbal Primary Students -- Asam.

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Single Subject Observation at KEEP -- Franklin.

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Major KEEP Findings
1971 - 1975

Findings	Technical Reports
1. KEEP's program to train its own staff in motivating children has been extremely successful.	6, 7, 8, 9, 11, 12, 24, 41, 56, 58
2. KEEP's children are, on the average, 20% more industrious than comparison schools.	55, 60
3. One contributing factor is providing them with success experiences, and a rich diet of teacher praise. When compared to other schools, locally and on the mainland, KEEP teachers praise children 3 times as much and scold them less.	56, 60
4. KEEP children have the same average IQ scores as national norms by the time they have completed the kindergarten year at KEEP, although they are lower than the norms when they begin kindergarten.	5, 36, 40
5. KEEP's children are handicapped in learning mathematics by their difficulties in reading and understanding word problems. Otherwise, they could probably perform at national norms in mathematics.	44, 60, 62
6. Even when KEEP children are very industrious, they do not achieve grade-level reading proficiency using available, standard curricula.	26, 36, 42, 43, 60
7. Reading-readiness programs in kindergarten are necessary and valuable.	34, 57
8. A reading curriculum for KEEP children should not begin with phonics, nor be primarily based on phonics.	26, 36, 42, 43, 50, 57.
9. Even though many KEEP children do not use Standard English in everyday speech, they still understand it.	15, 29, 59
10. There is a high correlation between skill in Standard English and skill in Hawaiian Islands Creole, as measured by KEEP tests. Relative to their classmates, there are very few children who are good in one dialect and poor in the other.	59
11. Being a pidgin speaker does not in itself handicap a child in learning to read, even when the instruction is in Standard English.	54, 59

Findings	Technical Reports
12. Skill in Standard English and Hawaiian Islands Creole both are related to reading achievement, but Standard English skill is slightly more important.	26, 54
13. Verbal IQ is more important in learning to read than skill in either Standard English or Hawaiian Islands Creole.	54
14. Hawaiian Islands Creole English (pidgin) speakers show steady improvement in Standard English speech skills from ages five to nine. This improvement occurs in rural, suburban, and urban schools.	15, 59
15. The grammatical features of Standard English that are difficult for Creole-speaking children are the same ones that are troublesome for Mainland Caucasian children. An investigation in progress indicates that this also is true for Indian, Black, Chinese, Japanese, Mexican immigrant, Korean, Filipino, and Hawaiian-Americans living in California.	59
16. Hawaiian Creole speakers show steady improvement in Hawaiian Creole from ages five to seven, just as they show steady improvement in Standard English. There is no evidence of a decline in Creole-speaking ability as the result of attending school.	59
17. By age nine, Creole speakers are able to use Standard English. This occurs without special drill or programs.	59
18. It is probably true that increasing the number of oral language opportunities and activities in general is more likely to affect academic achievement than drill or special classes focused on Standard English. Research and development will be needed to define and train teacher classroom skills that foster oral language development.	43, 57, 59
19. Social environment strongly affects oral language performance. Thus, Creole-speaking children will not always show the Standard English competence they have in test situations.	30, 59
20. In the kindergarten classroom, children interact and speak to others in patterns that have nothing to do with either Standard English or Hawaiian Creole ability. There is no tendency for kindergarten children to group themselves in terms of the dialect they use.	16
21. Kindergarten verbal ability scores are higher for children who attended preschool, but there is no difference on any measure when the children complete first grade. KEEP children who did not attend preschool perform the same on first grade reading achievement tests as those that did attend.	65

Findings	Technical Reports
22. The best predictors of first grade reading achievement are general verbal ability and reading-readiness scores.	59
23. The clusters of intellectual abilities in the KEEP population are identical to previous studies in other educationally disadvantaged populations.	54
24. Family background is strongly related to school achievement.	5, 40, 61
25. Hawaiian mothers use a different teaching style than U.S. Mainland mothers; they use more demonstration than verbal instructions. For KEEP children, school achievement is related to mother use of verbal directions.	61
26. KEEP students do as well or better than appropriate comparison schools which do not carry on extensive research. Hawaiian-American children in many schools, including KEEP, perform below grade level in basic academic areas.	36, 60
27. KEEP students show large and significant increases during kindergarten in school and reading readiness. They do not show increases of that magnitude in reading achievement in first grade.	5, 26, 36, 40, 42, 57
28. About 10-15% of KEEP children have serious intellectual/learning deficiences that require special education.	KEEP records
29. KEEP has devised effective methods for training public school teachers to motivate their pupils, when those teachers are interested in learning how.	33, 52
30. At least half of our teachers are also competent trainers and consultants to DOE teachers.	27, 33, 51, 52, 58
31. Effective cooperation has been maintained between KEEP and the DOE Board of Education, the Superintendents, principals, and those teachers with whom we have worked.	27, 33, 51, 52, 58
32. We have successfully exported to DOE teachers the following: management techniques, improved classroom organization, and curriculum materials and techniques in math and reading.	27, 33, 51, 52, 58
33. We have intensively studied two basic forms of exporting: workshops and continuing resource consultation. Both have been effective in meeting their goals. There is no real difference in cost. Both are labor-intensive.	working paper
34. To successfully influence public education in behalf of Hawaiian children, it is necessary that individual teachers be motivated to learn new skills. Further research is needed to find ways to enhance teachers' motivation to participate in KEEP training.	